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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,199	10/13/2005	Koji Tokuda	279096US3PCT	1253

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EXAMINER
YANG, JIE

ART UNIT	PAPER NUMBER
1793	

NOTIFICATION DATE	DELIVERY MODE
10/17/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/553,199	TOKUDA ET AL.	
	Examiner	Art Unit	
	JIE YANG	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 July 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10 and 15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10, and 15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claims 11-14 have been cancelled, claims 1-2 have been amended, claim 15 is added as a new claim, and claims 1-10 and 15 are pending in application.

Status of the Precious Rejection

The previous rejection of claims 1-4 under 35 U.S.C. 102(b) as anticipated by Kamikawa et al (US 6,413,471 B1, thereafter US'471) have been withdrawn in view of the amendment filed on 7/3/2008. However, in view of the amendment, a new ground(s) of rejection is made (see below).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-10 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamikawa et al (US 6,413,471 B1, thereafter US'471).

Regarding claims 1 and 2, US'471 teaches a process for producing reduced iron in a rotary hearth furnace (Abstract, col.1, lines 6-12 of US'471). US'471 teaches mixing an iron ore powder, a coal powder, a fluxstone (limestone) powder, and a

binder to form reduced iron compacts, which reads on the feedstock containing a carbonaceous reductant and an iron oxide-containing material as recited in the instant claims. US'471 teaches feeding, high temperature atmosphere (in which heating/reducing, melting steps are performed), and discharge portion (in which cooling, and discharging steps are performed) (Col.1, lines 13-23, and Col.2, line 47 to col.3, line 3 of US'471), which reads on the claimed process steps as recited in the instant claims. US'471 teaches air flow controlling partitions (Col.3, line 38 to Col.4. line 33 of US'471), which reads on flow rate-controlling partitions as recited in the instant claims.

Regarding the amended features: "…having flow rate-controlling partitions arranged therein for controlling the flow of furnace gas" in claims 1 and 2, US'471 teaches air flow controlling partitions (Col.3, line 38 to Col.4. line 33 of US'471), which reads on flow rate-controlling partitions as recited in the instant claims. US'471 teaches: "…partition plates as the supply portion partitioning means may be provided in the high temperature atmosphere space portion and the gas passage space portion. Thus, air flow from the compact supply portion and the gas passage space portion to the high

temperature atmosphere space portion and the compact discharge portion can be suppressed to diminish the influence on the high temperature atmosphere or on the regulation of pressure inside the furnace. Moreover, reoxidation of reduced iron can be prevented." (Col.3, lines 38-55 of US'471), which clearly reads on the partitions arrangement and their air-flow-control function as recited in the instant claims. Regarding the limitation of "oxidizing gas is prevented from flowing from the discharging step to the cooling step using the flow rate-controlling partitions" in the instant claim 1, US'471 teaches: "…high temperature atmosphere space portion partitioning means may be provided as partitions at least between a heating zone, a CO ratio control zone, and a reducing atmosphere zone in the high temperature atmosphere space portion. Thus, air flow in a side portion of the frame between the respective zones can be suppressed, and the CO ratio in each of the zones can be controlled appropriately. Consequently, reduced iron having a high degree of metallization can be produced." (Col.4, lines 49-59 of US'471), because air flow is a kind of oxidizing gas, therefore, suppressing air flow in the process of US'471 reads on the preventing oxidizing gas as recited in the instant claim 1.

Still regarding claims 1 and 2, and newly added claim 15, US'471 does not specify allowing the flow the furnace gas in the direction of the movement of the hearth (claim 1), maintaining higher pressure in melting step (claim 2); and maintaining higher pressure in the cooling step than the feeding step (claim 15). US'471 teaches using partition plates to regulate the pressure inside the furnace in order to increase the operation efficiency (Col.8, lines 24-35 of US'471). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to arrange the partition plates as demonstrated in US'471 to control the gas pressure in different portions of the furnace, which includes allowing the flow the furnace gas in the direction of the movement of the hearth (claim 1), maintaining higher pressure in melting step (claim 2); and maintaining higher pressure in the cooling step than the feeding step (claim 15) in order to increase the operation efficiency (Col.8, lines 24-35 of US'471).

Regarding claims 3 and 4, US'471 teaches providing partitions at least between a heating zone, a CO ratio control zone, and reducing atmosphere zone in the high temperature atmosphere space portion (Fig.6, claim 13, and col.10, lines 6-53 of US'471), which reads on the divided zones and partition

location as recited in the instant claims 3 and 4. US'471 further teaches the gas in the high temperature space portion flows in the direction of an arrow G (Refer to the figure 6 of US'471) and is discharged through the off-gas duct (Col.7, lines 35-54 of US'471), which reads on the limitation of discharging the furnace gas from the furnace gas outlet as recited in the instant claim 3.

Regarding claims 5-10, US'471 is applied to the claims for the same reason as stated in the previous rejections dated 4/4/2008.

Response to Arguments

Applicant's arguments with respect to claims 1-10 and 15have been considered but are moot in view of the new ground(s) of rejection.

Regarding the Applicant's arguments filed on 7/3/2008 with respect to claims 1-10 and 15, which are related to the amended features in the instant claims. The Examiner's position is stated as above.

The applicant further argues: "...instead of providing partitions which suppress the gas flow to the discharge portion in all direction, the invention is based on the idea of allowing the flow of furnace gas to cooling portion, but only in the direction of movement of the hearth." In response, the Examiner notices: US'471 teaches using partition plates to regulate the pressure inside the furnace in order to increase the

operation efficiency (Col.8, lines 24-35 of US'471). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to arrange the partition plates as demonstrated in US'471 to control the gas pressure in different portions of the furnace.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jie Yang whose telephone number is 571-2701884. The examiner can normally be reached on IFP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-2721244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JY
/Roy King/
Supervisory Patent Examiner, Art Unit 1793